¹ Refers to the court's docket number.

"Pedestrian Crosswalk Signal Apparatus - Pedestrian Crosswalk," is attached as Exhibit A to the complaint. Doc. #1, Exhibit A.

Defendant Spot Devices, Inc. ("Spot Devices") is a Nevada corporation that also manufactures and distributes IRWL systems including the RS 200 and RS 320 IRWL systems. *See* Doc. #3, Harrison Decl., Exhibit E-1 (RS 320); Exhibit I (RS 200).

On November 23, 2010, Light Guard filed a complaint against Spot Devices for patent infringement alleging that the RS 200 and RS 320 designs infringe Claim 1 of the '742 patent. Doc. #1. Claim 1 describes:

A pedestrian crosswalk signal apparatus to alert approaching vehicle traffic to the presence of a pedestrian in a pedestrian crosswalk, said pedestrian crosswalk signal apparatus comprising:

a roadway, said roadway having a surface;

a plurality of signal head members mounted on said roadway surface and extending at least some distance across said roadway and above said roadway surface to at least partially designate a pedestrian crosswalk, each of said signal head members conditioned to withstand contact by vehicle traffic, each of said signal head members including at least one light source adapted to direct a beam of light from said roadway surface in the direction of the approaching vehicle traffic and away from the pedestrian crosswalk, and adjacent to and generally parallel to said roadway surface; and

activation means to selectively illuminate said plurality of signal head members light sources to warn the drivers of the approaching vehicles that the pedestrian has entered the pedestrian crosswalk.

Doc. #1, Exhibit A, '742 Patent, Col. 8:2-22.

After carefully considering the briefs and other materials submitted by the parties, the record before the court, and the arguments of counsel at the December 16, 2011 *Markman* claim construction hearing, the court issues this order construing the disputed claim terms.

II. Legal Standard

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). Accordingly, the purpose of claim construction is to

"determin[e] the meaning and scope of the patent claims asserted to be infringed." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). The court, rather than the jury, must resolve a dispute raised by the parties regarding the proper scope of the claims. *O2 Micro Intern. Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (citations omitted).

The "objective baseline from which to begin claim interpretation" is "the ordinary and customary meaning of a claim term." *Phillips*, 415 F.3d at 1312-13. This refers to "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Id.* at 1313. The patent is read "not only in context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* In certain cases, "the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. In other cases, the claim term may have a particular meaning in the field of art that is not immediately clear. The court must examine those sources available to the public to show what a person skilled in the art would have understood the disputed claim language to mean. *Id.* Those sources include "words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

The claim language bears considerable importance to the claim interpretation. *Vitronics v. Conceptornic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The claims themselves can provide substantial guidance to the meaning of a claim. *Phillips*, 415 F.3d at 1314-15. The "context in which a term is used in the asserted claims can often illuminate the meaning of the same term in other claims." *Id.* at 1314. Furthermore, "the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the

independent claim." Id. at 1315.

The claims must also be read in view of the specification. "[T]he specification 'is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* (quoting *Vitronics*, 90 F.3d at 1582). The specification, as required by statute, describes the process of making and using the invention, and "[t]hus claims must be construed so as to be consistent with the specification, of which they are a part." *Merck & Co. v. Teva Pharm. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003). When scrutinizing the specification, however, a court must distinguish "between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim." *Phillips*, 415 F.3d at 1323. Only the former is permissible.

Additionally, the court may also consider the prosecution history, which includes the record of proceedings before the Patent and Trademark Office (hereinafter "PTO"), including any references to prior art cited during prosecution. *Id.* at 1317. The prosecution history can demonstrate how the PTO and the inventor understood the patent. *Id.* In particular, the court should exclude any interpretation disclaimed by the inventor during the patent's examination. *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005). The purpose of this rule is to "protect[] the public's reliance on definitive statements made during prosecution by precluding patentees from recapturing through claim interpretation specific meanings [clearly and unmistakably] disclaimed during prosecution." *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323-24 (Fed. Cir. 2003) (citations and internal quotations omitted).

Finally, a court may also consider extrinsic evidence, such as dictionaries, expert and inventor testimony, and learned treaties to construct a claim term. *Phillips*, 415 F.3d at 1317, 1319. However, their use should be limited to edification purposes: "while extrinsic evidence can shed useful light on the relevant art, the Federal Circuit has explained that it is less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id.* at 1317.

III. Claim Construction

A. Person of Ordinary Skill

The only proffered definition of a person of ordinary skill in the art comes from Spot Devices's retained expert, Dr. Kevan Shafizadeh ("Dr. Shafizadeh"),² who provided a declaration in support of Spot Devices's opening claim construction brief. Doc. #47, Shafizadeh Decl. Dr. Shafizadeh opines that a person of ordinary skill in the relevant art is a person possessing a bachelor's degree in electrical, mechanical, or civil engineering, or equivalent work experience, and at least 1-2 years in experience in traffic engineering. *Id.* For purposes of this claim construction order, the court accepts Dr. Shafizadeh's definition of a person of ordinary skill.

B. "Signal Head Member"

Claim 1

1

2

3

4

5

6

8

9

10

11

12

13

14

15

16

17

18

A pedestrian crosswalk signal apparatus to alert approaching vehicle traffic to the presence of a pedestrian in a pedestrian crosswalk, said pedestrian crosswalk signal apparatus comprising:

... a plurality of **signal head members** mounted on said roadway surface and extending at least some distance across said roadway and above said roadway surface to at least partially designate a pedestrian crosswalk, each of said **signal head members** conditioned to withstand contact by vehicle traffic, each of said **signal head members** including at least one light source adapted to direct a beam of light from said roadway surface in the direction of the approaching vehicle traffic and away from the pedestrian crosswalk, and adjacent to and generally parallel to said roadway surface . . .

Doc. #1, Exhibit A, '742 Patent, Col. 8:2-22.

19 ///

20 ///

21 ///

22 ///

23 ///

24

25

² Dr. Shafizadeh is an associate professor at California State University, Sacramento, and both a licensed professional civil engineer and a registered professional traffic operations engineer in the State of California.

| 1 | |
|---|--|
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

| Proposed Constructions ³ | |
|-------------------------------------|--|
| Light Guard | light module comprising the module housing, one or more lights, and means through which light exits the module, such as a lens or window |
| Spot Devices | self-contained enclosure that includes the light sources and associated electronics |

In its claim construction brief, Light Guard argues that the term "signal head member" should be construed as a light module which houses the essential parts for light to be emitted from the device. In contrast, Spot Devices argues that one of ordinary skill would understand "signal head member" to be a completely self-contained enclosure housing all associated electronics.

The starting point for claim construction is the claim language itself. *See Vitronics*, 90 F.3d at 1582. Here, there is no claim language that limits the term "signal head member" to a self-contained unit. Rather, the patent makes clear that the entire device is "self-contained," not just the signal head members. *See* Doc. #1, Exhibit A, '742 Patent, Col. 1:59-61 ("The pedestrian crosswalk signal apparatus of this invention provides a low-cost traffic warning system which is *self-contained*") (emphasis added).

Additionally, design figure 10, which is a cross-sectional diagram of a signalhead, shows a device that houses some, but not all of the separate components that make up a "signal head member." *See* Doc. #1, Exhibit A, '742 Patent, Col. 5:41-42. In particular, the power and activation components are external to the module housing. *Id.* Therefore, the court finds that Spot Device's "self-contained" construction is not supported by the plain language of the '742 patent. Accordingly, the court adopts Light Guard's construction of the term "signal head member."

21 ///

22 ///

23 ///

³ The parties' proposed constructions are taken from their opening *Markman* claim construction briefs. Doc. ##45, 46.

C. [M]ounted on said roadway surface . . .

Claim 1

... a plurality of signal head members mounted on said roadway surface and extending at least some distance across said roadway and above said roadway surface to at least partially designate a pedestrian crosswalk, . . .

| PROPOSED CONSTRUCTIONS | |
|------------------------|---|
| Light Guard | signal head members mounted on said roadway surface and extending at lease some distance across, and at least some distance above the roadway surface |
| Spot Devices | the signal head members are: (1) mounted entirely on the roadway surface (2) mounted along a line perpendicular to the direction of traffic extending part way across the roadway (3) above the roadway surface |

The parties proffer substantially different constructions for the phrase "mounted on said roadway surface and extending at lease some distance across said roadway and above said roadway." The main points of contention arise from the parties' interpretation of whether the claim language allows for a signal head member to be partially embedded in the roadway surface.

Light Guard argues that a partially embedded signal head member is contemplated by the patent specification which states that the mounted lights "are partially embedded in a roadway and placed across the roadway," and the patent abstract which describes that "the system includes a plurality of surface mounted lights partially embedded in, and placed across a roadway." Doc. #1, Exhibit A, '742 Patent, Col. 1:64-67.

In opposition, Spot Devices argues that Light Guard's construction is precluded because Light Guard specifically disclaimed the partially embedded claim language during patent prosecution in order to have the '742 patent issued over certain prior art references. The court agrees. After reviewing the relevant prosecution history and the parties' briefs on this issue, the court finds that Light Guard specifically disclaimed the partially embedded claim language during prosecution of the '742 patent and is precluded from offering its proposed construction that allows

⁴ The *Takahashi* reference is a U.S. Patent, United States Patent no. 4,570,207, which discloses an IRWL system in which luminous blocks are set within the road surface so that they are flush with the road surface. A copy of the patent is attached to Dr. Shafizadeh's initial declaration. Doc. #22, Exhibit K.

for partially embedded signal head members. *See Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) ("[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender.").

When Light Guard submitted its original application, the claim language stated as follows: "[a] plurality of surface mounted strobe lights *partially embedded* in said roadway to at least partially designate a pedestrian crosswalk" Doc. #46, Exhibit F, 275 App. at SPO00080 (emphasis added). This claim language was rejected by the Patent Examiner based on the *Takahashi* prior art reference⁴ which disclosed a plurality of surface mounted lights partially embedded in a roadway. Doc. #46, Exhibit F, 275 App. at SPO00098.

In order to overcome the Patent Examiner's decision, Light Guard submitted a series of claim amendments disclaiming the partially embedded language to overcome the design disclosed in *Takahashi*. The claim language was amended as follows:

- "A plurality of surface mounted strobe lights partially embedded in mounted on the surface of said roadway to at least partially designate a pedestrian crosswalk"

 Doc. #46, Exhibit F, 275 App. at SPO00107-08 (First Amendment, June 1997).
- "A plurality of strobe lights signal heads mounted on above the surface of said roadway to at least partially designate a pedestrian crosswalk" Doc. #46, Exhibit G, 275 App. at SPO00155 (Second Amendment, March 1998).
- "A plurality of signal heads mounted in the roadway and at least some distance above the surface of said the roadway to at least partially designate a pedestrian crosswalk" Doc. #46, Exhibit G, 275 App. at SPO00181-82 (Third Amendment, December 1999).

9

10

11

8

12

13

14

15

16

17

18 19

2021

22

23

24

25

26

- "A plurality of signal heads head members mounted in on the roadway and at extending at least some distance above the surface of the roadway to at least partially designate a pedestrian crosswalk" Doc. #46, Exhibit H, 275 App. at SPO00247 (Fourth Amendment, August 2000).
- "A plurality of signal head members mounted on the <u>said</u> roadway <u>surface</u> and at extending at least some distance above the surface of the <u>across said</u> roadway <u>and above said roadway</u> to at least partially designate a pedestrian crosswalk"
 Doc. #46, Exhibit H, 275 App. at SPO00284-85 (Final Amendment, July 2001).

After the last amendment, the Patent Examiner allowed the '742 patent over *Takahashi* finding that Light Guard's claim disclosed a "novel and unobvious arrangement of a plurality of strobe lights mounted on the surface of the roadway." Doc. #46, Exhibit F, 275 App. at SPO00110 (emphasis added). Further, Light Guard, in its responses to the Patent Examiner, focused on the mounting of its signal heads above the roadway to differentiate its design from the embedded design of Takahashi. See Doc. #46, Exhibit I, 275 App. at SPO00381 ("Takahashi's luminous block is buried in a road surface so that its radiating surface is flush with the road surface. In contrast, the claim requires that signal head members be mounted on the roadway surface and above the roadway surface.") (emphasis added). Thus, in distinguishing the prior art, Light Guard unambiguously surrendered the scope of the claim that would include a signal head member partially embedded in the roadway surface and narrowed the claim to require that the signal head members are mounted on the surface of the roadway. See Schindler Elevator Corp. v. Otis Elevator Co., 593 F.3d 1275, 1285 (Fed. Cir. 2010) ("[A]n amendment that clearly narrows the scope of a claim, such as the addition of a new claim limitation, constitutes a disclaimer of any claim interpretation that would effectively eliminate the limitation or that would otherwise recapture the claim's original scope."); see also Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 535 U.S. 722, 740 (2002). Accordingly, the court adopts Spot Devices's construction because that

above the roadway surface.

D. Direct a beam of light from said roadway surface . . .

adjacent to and generally parallel to said roadway surface . . .

Claim 1

Claim 1

... each of said signal head members including at least one light source adapted to direct a beam of light from said roadway surface in the direction of the approaching vehicle traffic and away from the pedestrian crosswalk, and

construction clearly and unequivocally provides that the signal head members are mounted on and

| Proposed Constructions | |
|------------------------|---|
| Light Guard | direct a beam of light from said signal head toward approaching vehicle traffic |
| Spot Devices | a beam of light emanating from a light source above the roadway towards oncoming traffic and away from the pedestrian crosswalk |

According to the plain claim language, the beam of light must be (1) above the roadway surface, and (2) only in the direction of the approaching traffic. The design figures in the claim specification supports these limitations and show that the light emanates from above the roadway surface and is only in the direction of traffic. *See* Doc. #1, Exhibit A, '742 Patent, Figure 3; Figure 10. Light Guard's proposed construction does not meet these two limitations because it does not require the light to be above the roadway surface and does not limit the direction of the light. Therefore, the court agrees with and adopts Spot Devices construction as the construction in line with the plain claim language.

E. Activation means . . .

A pedestrian crosswalk signal apparatus to alert approaching vehicle traffic to the presence of a pedestrian in a pedestrian crosswalk, said pedestrian crosswalk signal apparatus comprising . . .

activation means to selectively illuminate said plurality of signal head members light sources to warn the drivers of the approaching vehicles that the pedestrian has entered the pedestrian crosswalk.

| | PROPOSED CONSTRUCTIONS |
|-----------------|--|
| Light Guard | a mechanical switch or a proximity-type sensor switch |
| Spot Devices | the corresponding structure is a pair of switches mounted on poles on each side of the roadway consisting of either simple mechanical switches or proximity type sensor switches |

Both parties agree that this is a means plus function governed by 35 U.S.C. § 122. To construe a means-plus-function claim, the court must identify the recited function of the claim and then the corresponding structure disclosed in the specification that performs the recited function. *See Med. Instrumentation and Diagnostic Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003). Here, it is undisputed that the recited function is to selectively illuminate the signal head members to warn the drivers of approaching vehicles that a pedestrian has entered the crosswalk. The parties dispute the corresponding structure of the patent claim.

Light Guard argues that the corresponding structure is simply a "mechanical switch or a proximity-type sensor switch" because that is the simplest way to explain the function of triggering the system. However, that construction does not contain the appropriate corresponding structure as designated by the specification. The patent specification specifically discloses a pair of switches mounted on poles on each side of the roadway. *See* Doc. #1, Exhibit A, '742 Patent, Col 2:17-21; Col. 3:61-67; Col. 4:35-40. Further, the court finds that a construction that does not require the activation means on both sides of the street would be impractical to operate the device for the pedestrian on the opposite side of the road from Light Guard's single switch. Therefore, the court agrees with and adopts Spot Devices's construction.

23 ///

///

24 ///

25 ///

F. Dynamically compensate for poor visibility and night operating conditions

Claim 4

The pedestrian crosswalk signal apparatus of claim 1 including an ambient light sensing circuit to adjust light intensity to dynamically compensate for poor visibility and night operating conditions.

Doc. #1, Exhibit A, '742 Patent, Col. 8:29-32.

| Proposed Constructions | |
|------------------------|--|
| Light Guard | compensate according to poor visibility conditions (such as fog, smoke, or blowing dust), or the lack of sun at night, or both |
| Spot Devices | continuously compensating for both weather conditions and time of day |

Light Guard argues that its construction should be adopted because it is the plain and ordinary meaning of the claim terms. Light Guard contends that the claim language does not require adjustments to both poor visibility and night conditions, but just one of those conditions. The court disagrees. The court finds that Light Guard is attempting to impermissibly rewrite the claim by turning the conjunction "and" into the term "or."

The court finds that Spot Devices's construction is also inappropriate because it replaces the term "poor visibility" with "weather conditions" which is not used anywhere within the '742 patent. However, the court agrees that the term "dynamically" means continuously changing. See Doc. #1, Exhibit A, '742 Patent, Col. 6:35-37 ("ambient light is continuously monitored and the lights are dynamically adjusted to provide the optimum brightness based on current lighting conditions"). As such, the court finds that an appropriate construction of this disputed phrase is "continuously compensate according to poor visibility conditions and night operating conditions."

23 ///

///

24 ///

25 ///

G. Additional data related to the activation of said apparatus

Claim 5

The pedestrian crosswalk signal apparatus of claim 1 including data storage circuitry connected to said activation means to collect additional data related to the activation of said apparatus.

Doc. #1, Exhibit A, '742 Patent, Col. 8:33-36.

| Proposed Constructions | |
|------------------------|--|
| Light Guard | data related to the activation of said apparatus |
| Spot Devices | the number of pedestrians activating the apparatus, the direction of travel by the pedestrian, and the number of vehicles approaching or passing over the apparatus by time of day |

Spot Devices's construction seeks to import additional limitations into the claim by defining the additional data that must be collected. Spot Devices's construction is improper because it takes examples from the specification, which uses the term "such as," to be actual requirements of the type of data collected. *See Superguide Corp. v. Directv Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) ("A particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment."); *see also Phillips*, 415 F.3d at 1323 (holding that a court cannot import limitations from the specification into the claim). Therefore, the court accepts and adopts Light Guard's construction.

H. Said signal head light source is directed in a beam . . .

Claim 10

The pedestrian crosswalk signal apparatus of claim 1 wherein said signal head light source is directed in a beam having a vertical angular range of 0 to 5 degrees.

Doc. #1, Exhibit A, '742 Patent, Col. 8:48-50.

24 ///

25 ///

| 1 |
|----|
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |
| 18 |
| 19 |
| 20 |
| 21 |
| 22 |
| 23 |
| 24 |
| 25 |

| Proposed Constructions | | |
|------------------------|---|--|
| Light Guard | said signal head light source is directed in a beam having a vertical angular range of 0 to 5 degrees from said roadway surface | |
| Spot Devices | wherein the beam has a divergence in the vertical direction of between 0 and 5 degrees | |

The court finds that Light Guard's construction is appropriate because it comports to the way the specification uses the term "vertical angular range" which requires the range of the vertical angle formed by the light beam and the roadway surface to be less than 5 degrees. *See* Doc. #1, Exhibit A, '742 Patent, Col. 5:65-68 (". . . enabling the light beam to be directed generally parallel to the road surface"). Spot Devices's construction introduces a new term, "divergence," which is unsupported by the patent and would require additional claim construction. Therefore, the court accepts and adopts Light Guard's proposed construction.

IT IS THEREFORE ORDERED that the disputed claim terms and phrases are to be construed consistent with the court's order herewith.

IT IS SO ORDERED.

DATED this 12th day of June, 2012.

LARRY R. HICKS

UNITED STATES DISTRICT JUDGE

Elsihi